Geological Survey
of Canada

Current Research
2000-D9

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2000

Natural Resources Canada Ressources naturelles Canada

Canada

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Catalogue No. M44-2000/D9E-IN
ISBN 0-660-18052-9

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Aeromagnetic Survey Program of the Geological Survey of Canada, 1998–2000

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Dumont, R, Coyle, M., Oneschuk, D., Kiss, F., and Tod, J., 2000: Aeromagnetic Survey Program of the Geological Survey of Canada, 1998–2000; Geological Survey of Canada, Current Research 2000-D9, 3 p. (online; http://www.nrcan.gc.ca/gsc/bookstore)

Abstract: In 1998–2000, two high-resolution, regional aeromagnetic surveys totalling 148 533 line kilometres were flown in the Mackenzie Corridor, Northwest Territories. Also, in 1999, a high-resolution, regional aeromagnetic survey totalling 81 765 line kilometres was flown over Lake Ontario and northern New York State. Phase I of the Mackenzie Corridor survey and the Lake Ontario and northern New York State survey were both supported by a cost-sharing agreement with industry partners. A detailed, multiparameter electromagnetic/magnetic/gamma-ray spectrometric helicopter-borne survey totalling 11 400 line kilometres was flown in New Brunswick; this survey was funded by the Province of New Brunswick.

Résumé : Au cours de la période 1998-2000, deux levés aéromagnétiques régionaux à haute résolution, totalisant 148 533 km de lignes de vol, ont été réalisés dans le corridor du Mackenzie, dans les Territoires du Nord-Ouest. En 1999, un autre levé aéromagnétique régional à haute résolution, totalisant 81 765 km de lignes de vol, a également été effectué au-dessus du lac Ontario et de la partie nord de l'État de New York. La phase I du levé du corridor du Mackenzie ainsi que le levé du lac Ontario et de l'État de New York ont été financés dans le cadre d'une entente de partage des coûts avec des partenaires de l'industrie. Un levé héliporté à capteurs multiples (électromagnétique/magnétique/spectrométrie gamma) détaillé, totalisant 11 400 km de lignes de vol, a été effectué au Nouveau-Brunswick et son financement a été assuré par la province du Nouveau-Brunswick.

INTRODUCTION

In 1998–2000, the GSC aeromagnetic survey program included three regional aeromagnetic projects, two of which were in the Northwest Territories and one in the Lake Ontario area. A detailed HEM/magnetic/gamma-ray spectrometric survey was also flown in New Brunswick. Locations of these projects are shown in Figure 1 and details are summarized in Table 1.

NORTHWEST TERRITORIES

As part of a multiyear program, an aeromagnetic survey totalling 77 407 line kilometres was initiated in 1998 by a consortium of three oil companies and the Geological Survey of Canada on a cost-shared basis. The survey area is located in the Mackenzie Corridor extending approximately from south to north from latitude 64°N to Fort Good Hope. Consortium members are entitled to exclusive use of the data for one field season, prior to release to the public. The data will be released to the public in March 2000. The survey results support geological mapping and hydrocarbon exploration in a frontier region of Canada.

The Mackenzie Corridor Phase II survey commenced in June 1999 and covers an area north from Fort Good to latitude 68°N. The survey totals 71 126 line kilometres. As with Phase I, the survey data support geological mapping and hydrocarbon exploration.

LAKE ONTARIO/NORTHERN NEW YORK STATE

A total-field magnetic survey totalling 81 765 line kilometres was flown over an area covering the northern part of New York State, Niagara peninsula, and eastern Lake Erie. The new detail provided by the high-resolution magnetic data will help resolve questions related to basement structure and assist in work related to understanding the relationship between the basement and the sedimentary cover. One industry partner

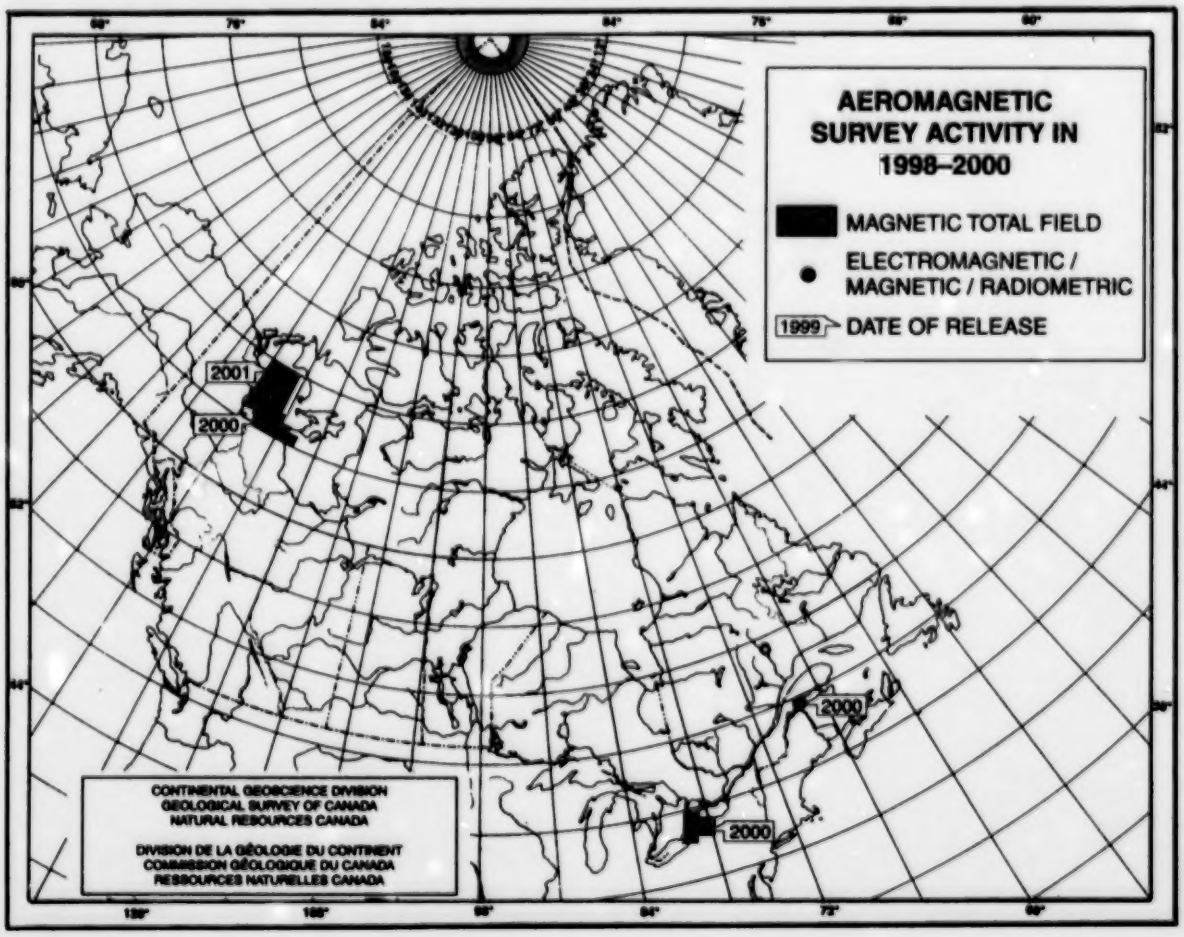

Table 1. Aeromagnetic survey activity in 1998–2000.

Survey	Type	Line km	Line spacing	Altitude	Year of publication
Mackenzie Corridor, Phase I, N.W.T. 1998–1999	Aeromagnetic Total Field	77 407	400 m 800 m	200 m MTC Drape	2000
Mackenzie Corridor, Phase II, N.W.T. 1999–2000	Aeromagnetic Total Field	71 126	800 m	200 m MTC Drape	2001
Lake Ontario, Northern New York 1999–2000	Aeromagnetic Total Field	81 765	400 m 800 m	150 m MTC Drape	2000
Restigouche, N.B. 1999–2000	Frequency Domain EM Magnetic Spectrometric	11 400	200 m	60 m MTC	2000

and the GSC participated in a cost-sharing agreement to acquire this data. The survey results will be released to the public in 2000.

NEW BRUNSWICK

A helicopter-borne frequency domain electromagnetic, magnetic, gamma-ray spectrometric survey was flown in the Kedgwick area in the summer of 1999 on behalf of the Geological Surveys Branch of the New Brunswick Department of Natural Resources and Energy (DNR&E). Survey lines were flown at 200 m intervals at a height of 60 m above ground, totalling 11 400 line kilometres. This survey is a continuation of the 1997 initiative for a detailed coverage of the rocks of the Gaspésie belt in northwestern New Brunswick to act as a stimulant for the mineral exploration in the region. Funds were provided by the Province of New Brunswick. Survey results will be released to the public in June 2000.

Geological Survey of Canada Projects 940001, 980007, 980008